Alg. 2 Warm Up #8-3

1. Give the exact radian measure for each angle:

a) 90° b) 30° c) 120° d) 330° e) 135°

2. Give the exact degree measure for each angle:

a) $\frac{\pi}{4}$ b) $\frac{5\pi}{3}$ c) $\frac{3\pi}{4}$ d) $\frac{7\pi}{6}$ e) 3π

What about: using $180^\circ = \pi$

1) $\frac{15}{1} \cdot \frac{\pi}{180} = \frac{\pi}{12}$

2) $\frac{420}{1} \cdot \frac{\pi}{180} = \frac{42\pi}{18} = \frac{7\pi}{3}$

3) $\frac{4\pi}{15} \cdot \frac{180^\circ}{\pi} = 48^\circ$

4) $\frac{9\pi}{5} \cdot \frac{180}{\pi} = 324^\circ$

$5\overline{)180}$ 36, -15, 30

$36 \times 9 = 324$

Purple WS (10 minutes with your team, then questions)

Alg II 7.1.6 day 2 HW Name:_____ Per: ___

No Calculator on these problems:

1) Convert 225 degrees to radians $\frac{225^{5}}{1}\cdot\frac{\pi}{180_{4}}=\frac{45\pi}{36}=\frac{5\pi}{4}$

2) Convert $\frac{3\pi}{4}$ radians to degrees.

Give the *exact* values of the following (no decimals...use radicals and fractions)

3) $\sin 120^\circ =$

$5\overline{)225}$ → 45, -20, 25

4) $\cos 45^\circ =$

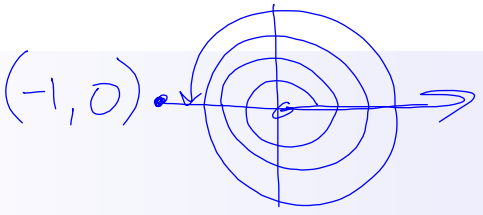
$5\overline{)180}$ → 36, -15, 30

5) $\tan\frac{5\pi}{3}$

6) $\cos(-390^\circ) =$

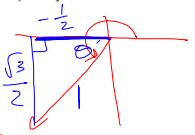
7) $\sin 7\pi = 0$

8) $\sin\left(\frac{\pi}{2}\right) =$



9) Given $\cos\theta = -\frac{1}{2}$, in quadrant III, use your unit circle to find θ (in degrees and radians) and then state the sine and tangent at that angle.

$\sin\frac{4\pi}{3} = -\frac{\sqrt{3}}{2}$



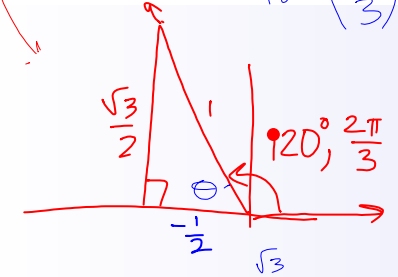
$\theta' = 60^\circ$

$\theta = 240^\circ, \frac{4\pi}{3}$

10) Given $\sin\theta = \frac{\sqrt{3}}{2}$, in quadrant II, use your circle to find θ (in degrees and radians) and then state the cosine and tangent at that angle.

TOA

$\tan\left(\frac{4\pi}{3}\right) = \frac{-\frac{\sqrt{3}}{2}}{-\frac{1}{2}}$



$+\frac{\sqrt{3}}{2}\cdot\frac{+2}{1} = \sqrt{3}$

$\tan\frac{2\pi}{3} = \frac{\frac{\sqrt{3}}{2}}{-\frac{1}{2}}$

$= \frac{\sqrt{3}}{2}\cdot\frac{-2}{1}$

$= -\sqrt{3}$

CALC OK on these problems:

For each of the angles below, i) sketch the angle showing the direction of rotation and ii) calculate the reference angle, θ'.

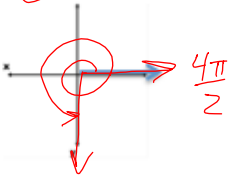
11) 212°

12) -290°

13) $\frac{7\pi}{9}$

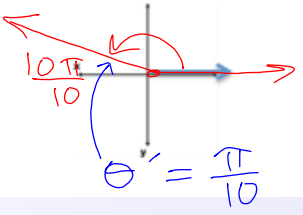
14) $\frac{13\pi}{3}$

15) $\frac{7\pi}{2}$



16) 280°

17) $\frac{9\pi}{10}$



18) 110°

19) 750°

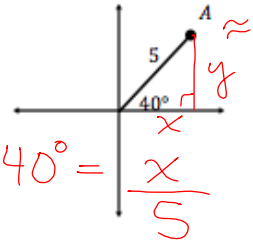
20) 430°

21) $\frac{5\pi}{3}$

22) $\frac{7\pi}{3}$

Find the coordinates of point A in each figure. 2 decimal places

15)

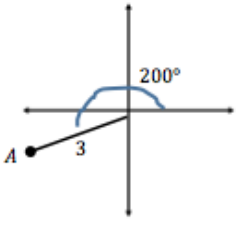


≈(3.83,

$\cos 40° = \frac{x}{5}$

$x = 5(\cos 40°)$

16)



Classwork: Tan WS (10 minutes in teams then questions)

Alg 2B Classwork 7.1.6: Unit Circle Name: _____ Per:_____

1. There are two key features to the unit circle: angle measures and coordinate points. In a few sentences, describe your method of building/finding each one WITHOUT memorizing it.

Angles (in radians) Coordinate Points (x, y)

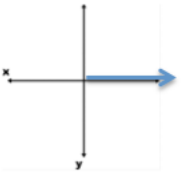
2. On a unit circle, every (x, y) point can be expressed as $(\cos\theta, \sin\theta)$. Using this information, state the value of the trig function at the given angle WITHOUT A CALCULATOR.

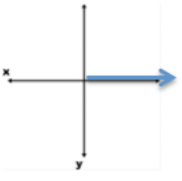
a. $\cos(45°) =$ _____ b. $\sin(240°) =$ _____

c. $\cos\left(\frac{3\pi}{2}\right) =$ _____ d. $\sin\left(\frac{11\pi}{6}\right) =$ _____

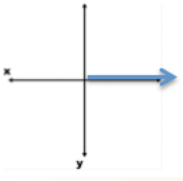
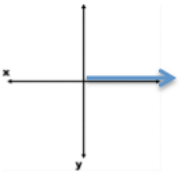
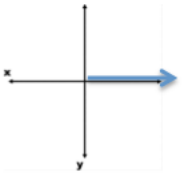
3. For each of the angles below, i) sketch the angle showing the direction of rotation and ii) calculate the reference angle, θ'.

a. $-225°$ b. $315°$ c. $65°$





d. $\frac{7\pi}{4}$ radians e. $-\frac{2\pi}{3}$ radians f. $\frac{13\pi}{4}$

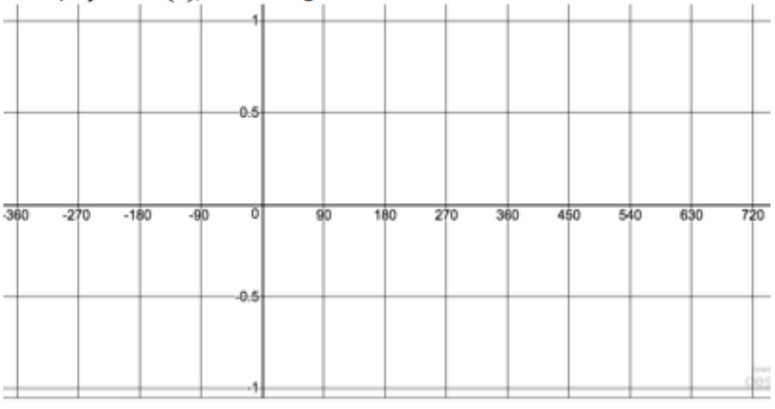
4. Without using a calculator, decide whether the equation is true or false. To do this, identify the quadrant and the reference angle for each. Then use a calculator to verify your decision.

a. $\sin 152° = \sin 28°$

b. $\cos\left(\frac{5\pi}{4}\right) = \cos\left(\frac{\pi}{4}\right)$

4. Graphing $y = \sin(\theta)$ and $y = \cos(\theta)$: Use your unit circle, not your calculator, to graph.

a. Graph $y = \sin(\theta)$, for θ in degrees

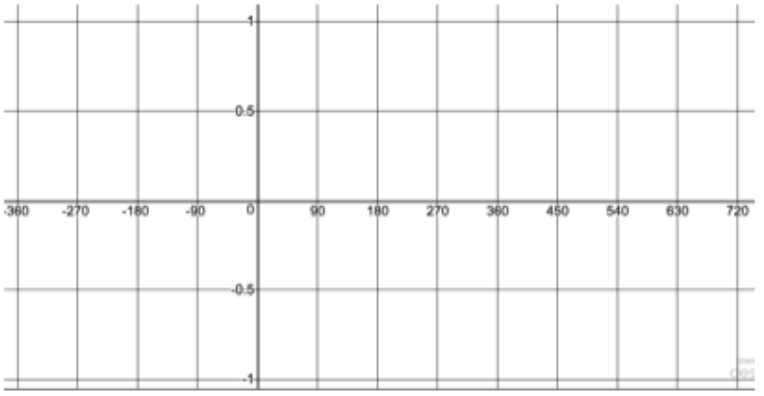


θ-intercepts: _____ y-intercept: _____

Name the angles where there is a maximum: _____ where there is a minimum: _____

What is the length of one cycle? _____

b. Graph $y = \cos(\theta)$



θ-intercepts: _____ y-intercept: _____

Name the angles where there is a maximum: _____ where there is a minimum: _____

What is the length of one cycle? _____

Algebra 2B Classwork 7.1 Summary Name_____ Per._____

Refer to the graphs on the back of your tan classwork, #4.

1. On your graph of $y = \sin \theta$, circle where any angle has a sine of $\frac{1}{2}$.

   a) On the interval $-360° < \theta < 720°$, how many solutions are there to the equation $\sin(\theta) = \frac{1}{2}$?

   b) If you graphed them all on the unit circle, what would their reference angle(s) be?

2. Let n = any integer.

a) For the graph of y = sin θ , write an expression for all the θ – intercepts in terms of n. (hint: Think about how far apart they are.)

b) Now write the expression for θ in radians.

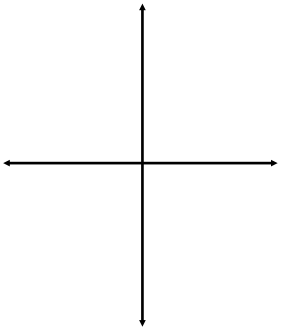
c) For the graph of y = cos θ , write an expression for the θ – intercepts for:

θ in degrees

θ in radians

3. The unit circle is divided into four quadrants, labeled using the Roman Numerals I, II, III, IV.

a) Label the quadrants:



b) In which quadrant(s) will the sine of θ have a positive value?

c) In which quadrant(s) will cos θ be positive?

d) In which quadrant(s) will the tan θ be positive?

HW:

Finish up blue, tan & white classwork.

Circle any problems you still have questions about.

Short Quiz Friday:
Solving Quadratics all three ways.